SECTION I—CLAIMS

Amendment to the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application. Claims 30, 33-35, and 38-44 are amended herein. Claims 1-29 remain canceled herein without prejudice. No new claims are added.

Listing of Claims:

1-29. (Canceled)

30. (Currently amended) A method comprising:

receiving content for transmission from a wireless communication system having M transmit antennae and N receive antennae and Nc subcarriers, where $Nc \gg M,N$, the received content for transmission from ~~a plurality of~~ more than two of the M transmit antennae, wherein the received content is a vector of input symbols (**s**) of size Nc x 1, and wherein the Nc subcarriers is the number of subcarriers of a ~~the~~ multicarrier wireless communication channel of the wireless communication system; and

generating a rate-one, space-frequency code matrix from the received content for transmission via the ~~plurality of~~ more than two of the M transmit antennae by dividing the vector of input symbols into a number G of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number G of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of MG subcarrier spacings. ~~, wherein M represents a number of transmit antennae.~~

31. (Previously Presented) A method according to claim 30, further comprising:

dividing each of the pre-coded vectors into a number of *LM* x *1* subvectors; and

creating an *M* x *M* diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g,\cdots,\Theta^T_{M\times k}\mathbf{s}_g\}$, where *k=1*...*L* from the subvectors.

32. (Previously Presented) A method according to claim 31, further comprising:

interleaving the *L* submatrices from the *G* groups to generate an *M* x *Nc* space-frequency matrix.

33. (Currently amended) A method according to claim 32, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of the transmit antennae *M,* receive antennae ~~antenna(s)~~ *N* and channel tap(s) *L*.

34. (Currently amended) A method according to claim 30, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of the transmit antennae *M,* receive antennae ~~antenna(s)~~ *N* and channel tap(s) *L*.

35. (Currently amended) An apparatus comprising:

a diversity agent:

to receive content for transmission from a wireless communication system having *M* transmit antennae and *N* receive antennae and *Nc* subcarriers, where *Nc*>>*M*,*N*, the received content for transmission via a multicarrier wireless communication channel of the wireless communication system, wherein the received content is a vector of input symbols (**s**) of size *Nc* x 1, and wherein the *Nc* subcarriers is the number of subcarriers of the multicarrier wireless communication channel; [[,]] and

to generate a rate-one, space-frequency code matrix from the received content for transmission on the multicarrier wireless communication channel from ~~a plurality~~

~~of~~ more than two of the *M* transmit antennae by dividing the vector of input symbols into a number *G* of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number *G* of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of *MG* subcarrier spacings.

~~, wherein *M* represents a number of transmit antennae.~~

36. (Previously Presented) An apparatus according to claim 35, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of *LM* x *1* subvectors, and to create an *M* x *M* diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g, \cdots, \Theta^T_{M\times k}\mathbf{s}_g\}$, where *k=1...L* from the subvectors.

37. (Previously Presented) An apparatus according to claim 36, wherein the space-frequency encoding element interleaves the *L* submatrices from the *G* groups to generate an *M* x *Nc* space-frequency matrix.

38. (Currently amended) An apparatus according to claim 37, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of the transmit antennae *M,* receive antennae ~~antenna(s)~~ *N* and channel tap(s) *L*.

39. (Currently amended) An apparatus according to claim 35, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of the transmit antennae *M,* receive antennae ~~antenna(s)~~ *N* and channel tap(s) *L*.

40. (Currently amended) A wireless communication system comprising:

a number *M* of omnidirectional antennas, wherein *M* comprises more than two omnidirectional

antennas;

a number N of receive antennae;

a number Nc of subcarriers of a multicarrier wireless communication channel of the wireless communication system, where $Nc>>M,N$; and

a diversity agent: [[,]]

to receive content for transmission via [[a]] the multicarrier wireless communication channel, wherein the received content is a vector of input symbols (**s**) of size Nc x 1, and

~~, wherein Nc is the number of subcarriers of the multicarrier wireless communication channel, and~~

to generate a rate-one, space-frequency code matrix from the received content for transmission on the multicarrier wireless communication channel from at least a subset of the M omnidirectional antennas by dividing the vector of input symbols into a number G of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number G of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of MG subcarrier spacings.

41. (Currently amended) A wireless communication system according to claim 40, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of LM x 1 subvectors, and to create an M x M diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g, \cdots, \Theta^T_{M\times k}\mathbf{s}_g\}$, where $k=1...L$ from the subvectors.

42. (Currently amended) A wireless communication system according to claim 41, wherein the space-frequency encoding element interleaves the L submatrices from the G groups to generate an M x Nc space-frequency matrix.

43. (Currently amended) A wireless communication system according to claim 42, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of the omnidirectional antennas M, receive antennae ~~antenna(s)~~ N and channel tap(s) L.

44. (Currently amended) A wireless communication system according to claim 40, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of the omnidirectional antennas M, receive antennae ~~antenna(s)~~ N and channel tap(s) L.